Part 2 discusses Plant Breeding in twelve chapters and contains such representative chapters as, Historical Introduction, Varieties in Plants, Composition of Plant Populations, Selection, Utilization of Hybrids, Mutations, Graft Hybrids and other Chimeras, Breeding Plants for Disease Resistance, Methods of Plant Breeding.

Part 3, Animal Breeding includes thirteen chapters. These run parallel to those of part 2, with some of peculiar interest added—as for example, Disease and Related Phenomena in Animal Breeding, Sex Determination in Animals, Fertility in Animals, and Some Beliefs of Practical Breeders. The latter deals briefly with the scientific grounds for disbelief in telegony, maternal impression, prepotency, and the like.

The concluding chapter states the grounds for a becoming modesty in relation both to the quantity and the precision of our present knowledge of animal genetics.

The book contains also a glossary, a list of the literature cited, and an adequate index. It is richly illustrated with pictures, diagrams, and tables. It is an attractively made book, and is sure to prove a useful and satisfying one.

GENETICS IN RELATION TO AGRICULTURE, by E. B. Babcock and R. E. Clausen. Pp. xx+675, fully illustrated. The McGraw-Hill Book Company, New York, 1918.

NITRATE CELLULOSE AS A SUBSTITUTE FOR CELLOIDIN

As a result of the war the importation of celloidin has been interrupted and the microscopist has been compelled to look about for workable, substitutes. Parlodion has been found to be very satisfactory, and can be obtained from the Arthur H. Thomas Company, Philadelphia. In this laboratory, however, we have had such excellent results with nitrate cellulose (soluble cotton) that I feel justified in calling it to the attention of other workers. Although never in very general use, soluble cotton as an embedding medium has been known for some time, and has been used for a number of years in the laboratory of Dr. Adolf Meyer, John Hopkins Hospital, as a routine method of embedding. It has two valuable features—the cost is less than any of the other practical celloidin substitutes, and its preparation is comparatively simple.

Nitrate cellulose is shipped in strong alcohol, and upon reaching the laboratory is put through the following process: It is washed first in several changes of 95% alcohol and squeezed nearly dry; then in two changes of absolute alcohol, after which it is dissolved in equal parts of absolute alcohol and ether, filtered through absorbent gauze into a flat

dish and placed under a bell jar to evaporate until dry. It is then cut into thin strips and put into a thermostat for several hours at a temperature of 37, the door of the thermostate being left ajar to allow for the escape of the ether fumes. When the chips are thoroughly dry they are stored in air-tight bottles ready for use. Where haste is necessary the filtration through gauze may be dispensed with, the cotton being decanted as it dissolves and evaporates slowly under a bell jar. The bottles are then placed in the thermostat under the same conditions as described above. This, however, is a crude method, useful in ordinary work, but not to be followed where careful infiltration is desired.

For embedding we use the same technique as for celloidin. Eight wide mouthed, cork-stoppered bottles are cleansed and *thoroughly dried.* The solutions are made up in such a way that each 100 cc. contains 2, 4, 6, etc., up to 16 grammes (by weight) of the soluble cotton. Tissue that has been thoroughly dehydrated and immersed in equal parts of absolute alcohol and ether, is then passed through these graded solutions, being left 24 hours in each. If the tissue is to be cut immediately it is mounted on a fibre block and hardened in chloroform or in 80% alcohol.

Nitrate cellulose can be obtained from Maas & Waldstein, New York.

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